



Leading by example,
saving energy and
taxpayer dollars in
federal facilities

Purchasing Specifications for Energy-Efficient Products

Legal Authorities

Federal agencies are required by the Energy Policy Act of 2005 (P.L. 109-58) and Federal Acquisition Regulations (FAR) Subpart 23.2 to specify and buy ENERGY STAR®-qualified products or, in categories with no ENERGY STAR label, FEMP-designated products which are among the highest 25 percent of equivalent products for energy efficiency.

Performance Requirement for Federal Purchases		
Freezer Type - Defrost	Total Volume	Annual Energy Use ^a
Chest - Manual	≤ 6.4 cu. ft.	230 kWh/year or less
Chest - Manual	6.5 to 8.4 cu. ft.	260 kWh/year or less
Chest - Manual	8.5 to 10.4 cu. ft.	290 kWh/year or less
Chest - Manual	10.5 to 12.4 cu. ft.	320 kWh/year or less
Chest - Manual	12.5 to 14.4 cu. ft.	350 kWh/year or less
Chest - Manual	14.5 to 16.4 cu. ft.	380 kWh/year or less
Chest - Manual	16.5 to 18.4 cu. ft.	410 kWh/year or less
Chest - Manual	18.5 to 20.4 cu. ft.	440 kWh/year or less
Chest - Manual	≥ 20.5 cu. ft.	470 kWh/year or less
Upright - Manual	≤ 6.4 cu. ft.	305 kWh/year or less
Upright - Manual	6.5 to 8.4 cu. ft.	330 kWh/year or less
Upright - Manual	8.5 to 10.4 cu. ft.	355 kWh/year or less
Upright - Manual	10.5 to 12.4 cu. ft.	380 kWh/year or less
Upright - Manual	12.5 to 14.4 cu. ft.	405 kWh/year or less
Upright - Manual	14.5 to 16.4 cu. ft.	430 kWh/year or less
Upright - Manual	16.5 to 18.4 cu. ft.	455 kWh/year or less
Upright - Manual	18.5 to 20.4 cu. ft.	480 kWh/year or less
Upright - Manual	≥ 20.5 cu. ft.	505 kWh/year or less
Upright - Automatic	≤ 12.4 cu. ft.	530 kWh/year or less
Upright - Automatic	12.5 to 14.4 cu. ft.	565 kWh/year or less
Upright - Automatic	14.5 to 16.4 cu. ft.	600 kWh/year or less
Upright - Automatic	16.5 to 18.4 cu. ft.	635 kWh/year or less
Upright - Automatic	18.5 to 20.4 cu. ft.	670 kWh/year or less
Upright - Automatic	≥ 20.5 cu. ft.	705 kWh/year or less

a) Annual energy use is based on DOE test procedure (10 CFR 430, Sub-Part B, Appendix E).

Buying Energy-Efficient Residential Freezers

When buying residential freezers directly from commercial sources, select products that are ENERGY STAR-qualified (see *For More Information*), all of which meet the annual energy use (kWh/year) in the *Performance Requirement* table. For products that don't display the ENERGY STAR, check the annual energy use listed on the yellow EnergyGuide label for models that meet this *Specification*.



U.S. Department of Energy
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FEMP Designated Product: Residential Freezers



Performance requirements apply to all forms of procurements, including: guide and project specifications; construction, renovation, repair, maintenance and energy service contracts, lease agreements and solicitations for offers. Energy performance requirements should be included in all evaluations of solicitation responses. Model language to assist agencies with incorporating these performance requirements into their procurement documents is available at http://www.eere.energy.gov/femp/procurement/eep_modellang.cfm.

The federal supply source for residential freezers is the General Services Administration (GSA), which sells them through its Multiple Awards Schedules program and on-line shopping network, *GSA Advantage!* Note that not all residential freezers sold by GSA are ENERGY STAR-qualified and some that do qualify may not be indicated as ENERGY STAR. When buying freezers through this sources, check the models you are considering against the list of qualified products on the ENERGY STAR web site to assure they meet this *Specification*.

Size and Type Selection

Select a freezer size and type that is appropriate for the amount of food or materials stored. An oversized freezer will increase purchase cost, require more space and also waste energy due to unused capacity. Chest freezers are more efficient than upright models because they typically have more insulation and cold air does not sink out of them when they are opened. Freezers with automatic defrost use more energy than manual defrost products and can also dehydrate food causing “freezer burn.”

Cost-Effectiveness Example			
Performance	Base Model ^a	Required	Best Available ^b
Annual Electricity Use	687 kWh	635 kWh	616 kWh
Annual Energy Cost	\$42	\$38	\$37
Lifetime Energy Cost ^c	\$545	\$500	\$485
Lifetime Energy Cost Savings	-	\$45	\$60

- a) The efficiency of the Base Model is the minimum allowed by current US DOE appliance standards (10 CFR 430, Subpart B, Appendix A1).
- b) More efficient products may have been introduced to the market since this specification was published. Information on the best available model was obtained from the ENERGY STAR freezer products list (see *For More Information*).
- c) Lifetime energy cost is the sum of the discounted value of the annual energy costs based on average usage and an assumed freezer life of 19 years. Future energy price trends and a discount rate of 3.0% are based on federal guidelines (effective from April, 2005 to March, 2006).

Cost-Effectiveness Assumptions

In the example above, annual energy use was calculated with the standard DOE test procedure on a 16.5 to 18.4 cubic foot, upright freezer with automatic defrost. The assumed electricity price is 6¢ per kWh, the average at federal facilities in the US.

Using the Cost-Effectiveness Table

In the example above the *Required* freezer is cost effective if its purchase price is no more than \$45 above the price of the *Base Model*. The *Best Available* model is cost-effective if its price is no more than \$60 above that of the *Base Model*.

What if my Freezer Type or Electricity Price is different?

ENERGY STAR has an Excel-based cost calculator for freezers on its web site. Go to http://www.energystar.gov/index.cfm?c=refrig_pr_refrigerators, and click on Savings Calculator - Consumer Residential Freezers. Select the freezer type and input the rate for electricity at the top of the page. The output section will automatically display results that better reflect your conditions.

For More Information:

EERE Information Center
1-877-EERE-INF or 1-877-337-3463
www.eere.energy.gov/femp/procurement/

General Services Administration
(816) 926-6760
www.fss.gsa.gov/
www.gsaadvantage.gov/

Defense Logistics Agency
www.dla.mil/
www.emall.dla.mil/

EPA/DOE ENERGY STAR has lists of qualified freezers at:
(888) 782-7937
www.energystar.gov/products/

American Council for and Energy Efficient Economy (ACEEE) publishes the *Consumer's Guide to Home Energy Savings* which contains a chapter on food storage. This guide is available from ACEEE at:
(202) 429-0063
www.aceee.org/

Federal Trade Commission lists the annual energy use of freezers and other appliance data on its web site at:
www.ftc.gov/energy/

Lawrence Berkeley National Laboratory provided market research and life cycle cost analysis in support of this energy-efficiency purchasing specification.
(202) 646-7950

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.



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Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable